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L1: Entry 1 of 1

File: USPT

Feb 5, 2002

US-PAT-NO: 6344201DOCUMENT-IDENTIFIER: US 6344201 B1

TITLE: Methods of identifying bacterial genes that are incompatible with bacterial pathogenicity, and the use of such genes, such as cadA, to reduce pathogenicity in a bacteria or to combat pathogenic bacterial infections

DATE-ISSUED: February 5, 2002

## INVENTOR-INFORMATION:

NAME	CITY	STATE	ZIP CODE	COUNTRY
Maurelli; Anthony T.	Silver Spring	MD	20902	
Fernandez; Reinaldo E.	Silver Spring	MD	20906	
Bloch; Craig A.	Ann Arbor	MI	48104	
Fasano; Alessio	West Friendship	MD	21794	

US-CL-CURRENT: 424/234.1; 424/257.1, 424/258.1, 536/26.1, 536/26.23, 536/26.24

## CLAIMS:

We claim:

1. A method of attenuating or inhibiting invasion of epithelial cells in a host by invasive pathogenic bacteria, comprising administering to the host an amount of quinolinate effective to attenuate or inhibit invasion of the epithelial cells by the invasive pathogenic bacteria.
2. The method of claim 1, wherein the host is a human.
3. The method of claim 1, wherein the invasive pathogenic bacteria comprise a *Shigella* spp.



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APPL-NO: 09/ 281274 [PALM]

DATE FILED: March 30, 1999

## PARENT-CASE:

CROSS-REFERENCE TO RELATED APPLICATION This application is related to Provisional Patent Application Serial No. 60/080,202, filed on Mar. 31, 1998, which application is incorporated herein by reference.

INT-CL: [07] A61 K 39/02, C07 H 19/207

US-CL-ISSUED: 424/234.1; 536/26.1, 536/26.24, 536/26.23, 424/257.1, 424/258.1

US-CL-CURRENT: 424/234.1; 424/257.1, 424/258.1, 536/26.1, 536/26.23, 536/26.24

FIELD-OF-SEARCH: 424/234.1, 424/258.1, 424/257.1, 424/200.1, 536/26.1, 536/26.24, 536/26.23

PRIOR-ART-DISCLOSED:

## U.S. PATENT DOCUMENTS

☐ Search Selected

Search ALL

PAT-NO

ISSUE-DATE

PATENTEE-NAME

US-CL

5502055

March 1996

Wang

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FOREIGN-PAT-NO	PUBN-DATE	COUNTRY	US-CL
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ART-UNIT: 1645

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## ABSTRACT:

"Black holes" in the genomes of bacterial pathogens represent deletions of "anti-virulence" genes, i.e. genes that are detrimental to a pathogenic lifestyle. Identification of the missing genetic loci in the "black hole" identifies genes that are incompatible with the bacteria's pathogenicity. These genes, their gene products, and compounds generated by the enzymatic action of these gene products represent potential new compounds that are inhibitory to the bacterial pathogen and thus useful as pharmaceuticals. The utility of this concept is demonstrated in the missing gene for lysine decarboxylase, and the resulting inhibitory activity of cadaverine (the diaminoalkyl reaction product of lysine

decarboxylase) on the Shigella enterotoxins. Diaminoalkyl compounds are therefore potent inhibitors of E. coli and Shigella spp. enterotoxins. Lysine decarboxylase generated from the gene cadA results in attenuation of the enterotoxic effects. New methods of use of diaminoalkyl compounds as medicaments are described. New uses of genetic constructs containing a cadA sequence, or other "anti-virulence" gene, for biochemical probes, for toxin receptor identification, and for pharmaceutical discovery are described. Additional uses are described for vaccines and DNA vaccine delivery.

3 Claims, 5 Drawing figures